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A REVIEW OF THE NEW WORLD LEAFHOPPER SUBGENUS *TEXANANUS* (*IOWANUS* BALL) (HEMIPTERA: CICADELLIDAE: DELTOCEPHALINAE) WITH A CHECKLIST AND DISTRIBUTION SUMMARY FOR SPECIES IN THE GENUS

STUART H. MCKAMEY

Systematic Entomology Laboratory, PSI, Agricultural Research Service, U.S. Department of Agriculture, % National Museum of Natural History, MRC-168, Washington, D.C. 20560-0168, U.S.A. (e-mail: smckamey@sel.barc.usda.gov)

Abstract.—The taxonomy of the subgenus *Texananus* (*Iowanus*) is reviewed. Oman's concept of the genus *Texananus* Ball is accepted, its subgenus *Iowanus* Ball being diagnosed by the presence of hooklike appendages arising from the internal wall of the male pygofer. The known range of *Texananus* (*Iowanus*) *apicalis* DeLong and Hershberger (= *Texananus copalanus* DeLong and Martinson, **new synonymy**) is extended from Mexico southward to Panama and the external and genitalic variations in Central American specimens are described. The Venezuelan species *Texananus* (*Iowanus*) *contaminatus* Linnavuori is **reinstated** as a valid species and the male is described for the first time; its paratype, from Mexico, is a misidentified female of *Texananus* (*Iowanus*) *apicalis*. The following species are **newly placed to subgenus**: *T.* (*Texananus*) *barbus* DeLong, *T.*(*T.*) *biacus* DeLong, *T.*(*T.*) *bilicium* DeLong, *T.*(*T.*) *cuspidatus* DeLong, *T.*(*T.*) *hosanus* (Ball), *T.*(*T.*) *serrellus* DeLong, *T.*(*T.*) *uncinatus* DeLong, and *T.*(*T.*) *uncus* DeLong. The following species, all formerly in the subgenus *Texananus* (*Excultanus* Oman) except for the last three, which were formerly in *Texananus* Ball but unplaced to subgenus, are referred to the genus *Excultanus*, resulting in nine **new combinations**: *Excultanus agrillaceus* (Van Duzee), *E. conus* (DeLong), *E. dorothyae* (DeLong), *E. eugeneus* (Ball), *E. neomexicanus* (Baker), *E. paralus* (DeLong), E. *plummeri* (DeLong), *E. horridus* (DeLong), and *E. parrai* (DeLong). *Aridanus* DeLong and Hershberger is treated again as a synonym rather than a subgenus of *Texananus*. Diagnoses for the subgenera of *Texananus* and a key to the nine species of *Texananus* (*Iowanus*) are provided, as well as a checklist with critical synonymies and distribution summaries for all 55 valid species in the genus.

Key Words: taxonomy, vector, Athysanini, *Excultanus*

Any division of the Western Hemisphere into Nearctic and Neotropical regions will be an imperfect basis for regional faunal studies. This problem is acute for leafhoppers of the subfamily Deltocephalinae, because many genera of the southwestern United States also occur in Mexico and Central America. Most deltocephaline species have been treated in two synopses: Oman's (1949) revision of "Nearctic" leafhoppers, which deals with America North of Mexico, and Linnavuori's (1959) revision of Deltocephalinae and related subfamilies of "Neotropical" leafhoppers, with the geographical boundary being drawn "approximately in Costa Rica" (Linnavuori 1959: 346).

Despite the advances made in these two major works, and others since, the geographical gap in coverage by Oman (1949)

and Linnavuori (1959) has left the taxonomy of many species from Mexico and northern Central America relegated to scattered small publications dealing with few species. Consequently, the taxonomic study of many Nearctic genera is far from complete.

The genus *Texananus* Ball, which contains at least five vectors of the aster yellows virus (Nielson 1968), is one such genus. More than two-thirds of its species occur in the U.S., most of the remainder in Mexico, and two species, represented only by females, have been reported from Costa Rica and Venezuela. During the present review, specimens discovered from Nicaragua, Costa Rica, Panama, and Venezuela clarified the taxonomic status of a number of species, and revealed previously unreported features relevant to the morphological delimitation of the subgenus *T. (Iowanus)*.

Review of Literature

Texananus and *Iowanus* were originally described by Ball (1918) as subgenera of *Phlepsius* Fieber, based on external features: the head narrower than the pronotum and the pronotal lateral margin long and carinate. The two subgenera were distinguished from each other by overall body size, relative wing length and head width, and by the degree of activity of the adults. Later, *Phlepsius* was divided into several genera such that *Phlepsius* is exclusively Palearctic and the closest New World relatives of *Texananus* include genera such as *Phlepsanus* Oman and *Paraphlepsius* Baker. Crowder (1952) provided a key to distinguish *Texananus* from other *Phlepsius*-like genera.

After both *Texananus* and *Iowanus* had been elevated to generic status (DeLong and Caldwell 1937, DeLong and Hershberger 1948), Oman (1949) introduced genitalic structure into the generic concept, reducing *Iowanus* to a subgenus of *Texananus* and diagnosing it by the presence of hooklike processes arising from the internal posterior margins of the pygofer in the male. At the same time, Oman erected the new subgenus *Texananus* (*Excultanus*) for Nearctic species with a broadly excavated sternum VII in the female and that lack a posterior extension of the connective in the male genitalia. DeLong and Hershberger (1949) proposed the monotypic subgenus *Texananus* (*Aridanus*) for *T. areolatus* (Baker) for its concave and anteriorly carinate vertex of the head.

In a revision of *Texananus* species of the United States and Canada, Crowder (1952) treated the subgenus *Aridanus* as a synonym of *Texananus* and followed Oman's concept of the subgenus *Iowanus* but added a diagnostic feature present in all species described by that time: the posterior pygofer margin developed into a lobe.

Linnavuori (1959) elevated *Excultanus* to generic status, the genus *Texananus* thereby becoming distinguishable from other *Phlepsius*-like genera by the presence of a posterior projection (single or double) of the connective below the aedeagus (Figs. 4–5). In defining *Iowanus*, Linnavuori (1959) followed Oman's (1949) less restrictive definition, referring only to the pygofer hooklike processes, despite the absence of species known to lack a posterior lobe of the male's pygofer. The new subspecies he described was based on a female holotype from Caracas, Venezuela, and a female paratype from Sinaloa, Mexico. As described below for the first time, the male of Linnavuori's new leafhopper lacks a posterior lobe on the pygofer.

Metcalf (1967) catalogued *Aridanus* and *Excultanus* as valid subgenera of *Texananus*, elevated *T. distinctus* (Lathrop) from subspecific status under *T. ovatus* (Van Duzee) (Crowder 1952), and referred *T. eugeneus* (Ball) to *Texananus* (*Excultanus*). Nielson (1968) concurred with Linnavuori (1959), treating *Excultanus* as a full genus.

DeLong and Martinson (1973) added one more species to the genus, *T. copalanus*, from Sinaloa, Mexico, unplaced to subgenus.

Materials and Methods

Specimens for the study were from the National Museum of Natural History, Smithsonian Institution, Washington, DC (NMNH), the Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica (INBio), the Museo Entomológico, S.E.A., A.P. 527, Leon, Nicaragua (MAES), and the DeLong collection of Ohio State University, Department of Entomology, Columbus, Ohio, USA (OSUC). In the checklist below, an asterisk (*) indicates that a primary or secondary type specimen was examined in this review.

The pygofers and genitalia were prepared by briefly boiling the abdomen in a weak potassium hydroxide (KOH) solution. KOH-treated parts were preserved in glycerin in polypropylene microvials beneath the specimens. Illustrations were prepared with the aid of a camera lucida mounted on a Leica stereoscope at magnifications of 8× to 250×.

Results

Genus *Excultanus* Oman

Excultanus Oman, 1949: 142. Type species by original designation: *Jassus excultus* Uhler, 1877.

Diagnosis.—Differs from other Deltocephalinae in having: head narrower than pronotum (Fig. 9); forewings with appendix well developed; pronotum and usually forewings with vermiculate pigment lines (Pl. 39, Fig. 1 of Oman 1949); subgenital plates with setae; genital connective lacking posterior projection below aedeagus.

Notes.—When Linnavuori (1959) elevated *Excultanus* to generic status, he only treated the Central American species but clearly intended it also for the Nearctic species previously included under the genus-group name, citing Oman (1949). Likewise, Nielson (1968) explicitly accepted the generic rank of *Excultanus* but mentioned only *E. incurvatus* (Osborn and Lathrop), the single species known to vector phytopathogenic viruses. In the present review, examination of specimens in the NMNH and OSUC verified the generic placement of the four species from the United States listed by Oman (1949) and the seven Mexican species previously in *Texananus* (*Excultanus*) or in *Texananus* but unplaced to subgenus. Thus the following **new combinations** are proposed: *Excultanus dorothyae* (DeLong), *E. neomexicanus* (Baker), *E. conus* (DeLong), *E. horridus* (DeLong), *E. paralus* (DeLong), *E. parrai* (DeLong), *E. plummeri* (DeLong), and *E. eugeneus* (Ball). *Excultanus agrillaceus* (Van Duzee), **new combination,** also previously in *Texananus* (*Excultanus*), is referred to *Excultanus* based on the original description.

Genus *Texananus* Ball

Phlepsius (*Texananus*) Ball, 1918: 384. Type species by original designation: *P.*(*T.*) *mexicanus* Ball, 1918.

Phlepsius (*Zioninus*) Ball, 1918: 388. Type species by original designation: *P. extremus* Ball, 1901.

Texananus (*Aridanus*) DeLong & Hershberger, 1949: 173. Type species by original designation: *Phlepsius areolatus* Baker, 1898. [Authorship of subgenus erroneously cited by Crowder 1952 as DeLong]

Diagnosis.—Differs from other Deltocephalinae in having: head narrower than pronotum (Fig. 9); forewings with appendix well developed; pronotum and usually forewings with vermiculate pigment lines (Pl. 39, Fig. 1 of Oman 1949); subgenital plates with setae; genital connective with posterior projection (single or double) below aedeagus (Figs. 4–5).

Notes.—The genus-group name *Aridanus* is treated again as a synonym rather than a subgenus of *Texananus,* because the genital morphology of its single species, *T.* (*Texananus*) *areolatus* (reinstated subgeneric placement), is usual for the genus *Texananus.* The head features for which the subgenus was erected are considered insufficient for subgeneric status.

Illustrations of the female sternum VII and male pygofer and genitalia for most species were provided by DeLong (1939b, 1943, 1944), DeLong and Hershberger (1948, 1949), Crowder (1952), and DeLong and Martinson (1973).

Most Mexican species, listed below, had never been placed to subgenus. The following referrals are based on examination of type specimens.

T. barbus DeLong. See *Texananus* (*Texananus*) *barbus* DeLong.
T. biacus DeLong. See *Texananus* (*Texananus*) *biacus* DeLong.
T. bilicium DeLong. See *Texananus* (*Texananus*) *bilicium* DeLong.
T. cuspidatus DeLong. See *Texananus* (*Texananus*) *cuspidatus* DeLong.
T. horridus DeLong. To *Excultanus horridus* (DeLong), **new combination.**
T. hosanus (Ball). See *Texananus* (*Texananus*) *hosanus* (Ball).
T. parrai (DeLong). To *Excultanus parrai* (DeLong), **new combination.**
T. plummeri DeLong. See *Excultanus plummeri* (DeLong), **new combination.**
T. serrellus DeLong. See *Texananus* (*Texananus*) *serrellus* DeLong.
T. uncinatus DeLong. See *Texananus* (*Texananus*) *uncinatus* DeLong.
T. uncus DeLong. See *Texananus* (*Texananus*) *uncus* DeLong.

Subgenus *Iowanus* Ball

Phlepsius (*Iowanus*) Ball, 1918: 382. Type species by original designation: *P.*(*I.*) *handlirschi* Ball, 1918.

Diagnosis.—Inner pygofer margin of male bearing a hooklike process arising posteriorly or dorsoposteriorly. Externally most species are very similar, so the species are best diagnosed based on the male pygofer and genitalia or female sternum VII.

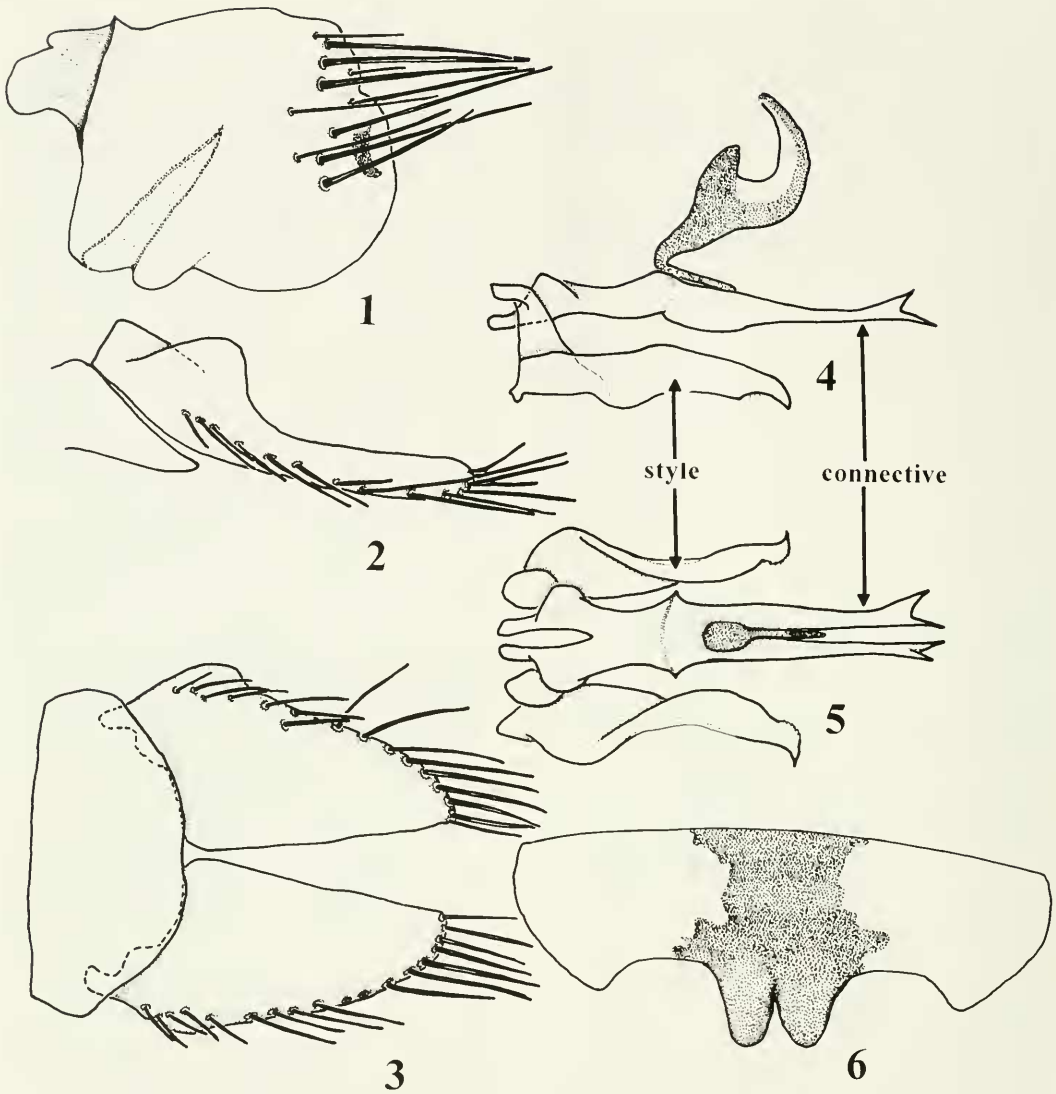
Notes.—Since the introduction of pygofer and genital morphology into the limits of *Texananus* subgenera (Oman 1949), *Iowanus* has been defined based on its combination of lobate extensions on each side of the male pygofer and the presence of hooklike processes arising from the internal wall of the male pygofer (Crowder 1952, DeLong and Martinson 1973) or simply by the latter feature (Oman 1949, Linnavuori 1959). Only the less restrictive definition encompasses all species bearing the hooklike processes, because the species *apicalis* and *contaminatus* lack lobate extensions of the pygofer.

The hooklike processes of *Iowanus* species do not appear to be homologous to the dorsal pygofer processes of species of the genus *Paraphlepsius* [e.g., *P. fuscipennis* (Van Duzee); Fig.78 of Linnavuori 1959], a close relative of *Texananus.*

Key to Species of *Texananus* (*Iowanus*)

Males

1. Posterior projection of aedeagal connective bifurcate basally, produced into two long, slender processes (Fig. 5) 2
– Posterior projection of aedeagal connective acute or cleft, produced into a single long, slender process, not bifurcate basally 4
2. Each side of pygofer with elongate posterior lobe; hooklike process of inner pygofer margin more than 6× longer than its width at mid length, arising posteriorly, directed mesad, and crossing each other . . . . . *lyratus*
– Pygofer lacking posterior lobate extensions; hooklike process of inner pygofer margin about 3× longer than its width at mid length, arising dorsally, directed ventroposteriorly, and much too short to cross each other (Fig. 1) 3
3. Aedeagal connective with each posterior slender process itself bifid apically (Figs. 4–5) . . . . . *contaminatus*
– Aedeagal connective with each posterior slender process acute . . . . . *apicalis*
4. Pygofer with posterior extension not (or weakly) constricted, in lateral view shorter than greatest width, ventral margin forming obtuse angle with basal portion of pygofer 5
– Pygofer with posterior extension constricted or almost so, in lateral view distinctly longer than greatest width, ventral margin forming angle of 90° or less with basal portion of pygofer 7
5. Aedeagal connective not cleft apically . . . . . *handlirschi*
– Aedeagal connective cleft apically 6
6. Aedeagal connective with each short branch of posterior process itself bifid apically . . . *dicentrus*



Figs. 1–6. *Texananus* (*Iowanus*) *contaminatus*. 1, Male pygofer, lateral view, showing location of hooklike process on internal wall. 2–3, Male sternum VIII and subgenital plates in lateral and ventral views, respectively. 4–5, Aedeagus, connective, and styles, in lateral and dorsal views, respectively. 6, Female sternum VII, ventral view. All drawings to same scale.

– Aedeagal connective with each short branch of posterior process rounded apically . . . . *caducus*

7. Aedeagal connective with distal third of posterior process directed ventrally at right angle to basal two-thirds . . . . . *majestus*

– Aedeagal connective with only tip of posterior process directed ventrally 8

8. Pygofer in lateral view with posterior lobe strongly constricted; connective with posterior apex in dorsal view straight and slightly cleft . . . . . *bullatus*

– Pygofer in lateral view with posterior lobe almost parallel-sided; connective with posterior apex in dorsal view straight and strongly cleft, emargination forming a right angle . . *longipennis*

Females
(except *T.* (*I.*) *dicentrus*, the female of which is unknown)

1. Sternum VII posterior notch shallow, not extending anteriorly beyond bases of medial den-

tate processes or into sternum proper (Fig. 6) . . . . . *apicalis, contaminatus*

– Sternum VII posterior notch deeper, extending anteriorly beyond bases of medial dentate processes, into sternum proper 2

2. Sternum VII with posterior notch narrow, nearly parallel-sided, its anterior angle acute 3

– Sternum VII with posterior notch wide, its sides approaching and meeting at an angle of approximately 45° 6

3. Sternum VII posterior notch extending more than half way to base of sternum . . . *handlirschi*

– Sternum VII posterior notch extending less than half way to base of sternum 4

4. Sternum VII with fuscous macula restricted to immediate area around notch; lateral to notch, posterior margin weakly concave . . . *longipennis*

– Sternum VII with fuscous macula extending to base of sternum; lateral to notch, posterior margin weakly or strongly concave 5

5. Sternum VII with posterolateral corners acutely angled, posterior margin laterad of medial dentate processes forming deep concavity; dentate processes extending posteriorly distinctly less than posterior corners of sternum . . . . . *bullatus*

– Sternum VII with posterolateral corners broadly convex, forming approximately a right angle, posterior margin weakly concave; posterior extension of medial dentate processes and posterior corners of sternum subequal . . . *lyratus*

6. Sternum VII with sides of notch strongly produced and acute; lateral to these medial dentate processes, posterior margin deeply concave; sternum VII fuscous macula extending to base of sternum . . . . . *majestus*

– Sternum VII with sides of notch weakly produced and blunt; lateral to these blunt processes, posterior margin shallowly concave; sternum VII fuscous macula present but extending only about two-thirds toward base of sternum . . . . . *caducus*

Checklist and Distribution Summary for Species of *Texananus* (*Iowanus*)

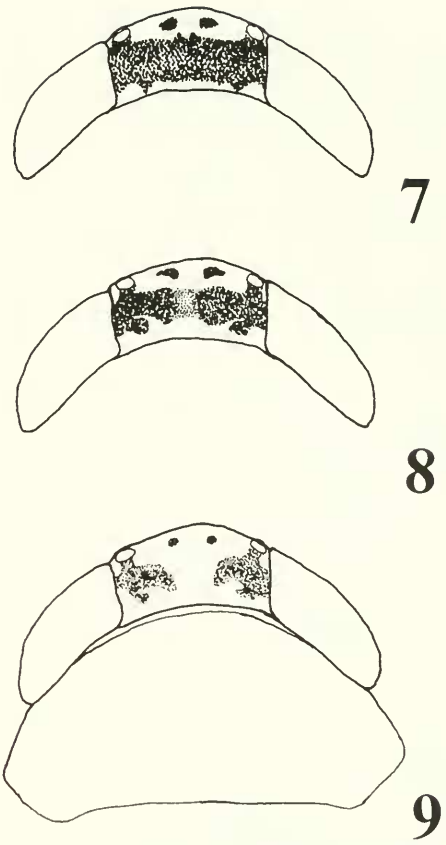
apicalis (DeLong & Hershberger)—MEXICO, NICARAGUA, COSTA RICA, PANAMA

Iowanus apicalis DeLong & Hershberger 1948: 114 [n. sp.]

Texananus (*Iowanus*) *apicalis* (DeLong & Hershberger); Oman 1949: 142.

**Texananus* (*Iowanus*) *apicalis contaminatus* Linnavuori 1959: 201 [in part; n. sp.; paratype female, NMNH, misidentified specimen of *apicalis*]

Texananus copalanus* DeLong & Martinson 1973: 202 [n. sp.; holotype OSUC], **new synonymy



Figs. 7–9. 7, Head of *Texananus* (*Iowanus*) *apicalis*, dorsal view. 8–9, Head of *T.* (*I.*) *contaminatus* head (Fig. 9 with pronotum), dorsal views.

Notes.—DeLong and Martinson (1973) did not place *T. copalanus* to subgenus but stated that its closest relative was *T. pergrada* [sic], a species of the subgenus *Texananus*. They erroneously described the pygofer as having two pairs of spines, rather than one, beneath the pygofer wall, but contrasted the species with *Iowanus* based on the absence of "protruding spines or lobes," referring to the secondary structure that Crowder (1952) included in his diagnosis of the subgenus. The only feature potentially distinguishing *T. apicalis*, described from a female, from *T. copalanus*, described from males and a female, is the sharpness of the medial dentate processes

of the female sternum VII, described as acute in the former species and as rounded in the latter. Both conditions were found, however, within series from Costa Rica.

Summary of previously reported distribution.—MEXICO: Guerrero (*apicalis* holotype), Sinaloa (*contaminatus* paratype, *copalanus* holotype and paratypes).

New distribution records (Nicaragua specimens, MAES; Costa Rica specimens, INBio; Panama specimens, NMNH).—NICARAGUA: Masaya, Las Flores, malaise trap, J.M. Maes, 1-VIII-1994 (5 females), 12-VIII-1994 (2 males), 30-VIII-1994 (1 female); Leon, J.M. Maes & F. Collantes, 31-1-1995 (1 female); Leon, between La Leona and Izapa, J.M. Maes & F. Collantes, 28-I-1195 (1 male, 1 female, UV light), 30-I-1995 (3 males, 2 females); Leon, El Fortin, J.M. Maes & F. Collantes, 31-I-1995 (1 male). COSTA RICA: Guanacaste Prov.: 15 km SW Cañas, Estación Experimental E. Jimenez Nuñez, malaise traps, tropical dry forest 13-VI-1993 to 15-VIII-1993, R.G. Allen (24 males, 16 females); Cerro El Hacha, 800 m., 12 km SE La Cruz, malaise traps, 1988 GNP Biod. Surv. (6 males, 3 females); 3 km NW Nacaome, 100 m., Parque Nacional Barra Honda, 14-IX to 5-X-1992, M. Reyes (1 male); Estación Santa Rosa, 300 m., Parque Nacional Santa Rosa, II-1992, D. Brenes (1 female); Finca Jenny, 30km N Liberia, X-1989, E.Araya & R. Espinoza (1 female). PANAMA: Arraijan Pr., 7-X-1952, F.S. Blanton (5 males, 2 females); Villa Real, 12-IX-1952, F.S. Blanton (2 males).

Variation in Central American specimens.—Vertex with coloration range as described below for *T. contaminatus* (Figs. 8–9), or with a solid dark brown macula between the eyes (Fig. 7), or with anterior spots pale or absent (some Mexican and Costa Rican specimens). The posterior extensions of the aedeagal connective are always acute, but either: evenly tapering and subparallel (Fig. 3 of DeLong and Martinson 1973); evenly tapering and weakly divergent; or with inner edge of each process straight, parallel and almost touching, and outer edge tapering mesad just before apex; or with previous condition but processes weakly divergent (all variations present in the long series from Costa Rica). The aedeagus itself can be evenly convex along its ventral and posterior margin (as in *T. contaminatus*, Fig. 4) or have a weak protrusion at its base ventrally.

bullatus DeLong—USA

Texananus bullatus DeLong 1939a: 237 [n. sp.]

Distribution.—USA: Arizona, New Mexico (holotype).

caducus DeLong—USA

Texananus caducus DeLong 1939a: 238 [n. sp.]

Distribution.—USA: Arkansas, Georgia, Illinois, Kansas, Kentucky, Louisiana, Minnesota, Missouri, Oklahoma (holotype), Tennessee, Texas.

****contaminatus*** Linnavuori, **reinstated, elevated status**—VENEZUELA

Texananus (*Iowanus*) *apicalis contaminatus* Linnavuori 1959: 201 [n. sp.; holotype NMNH).

Description of male.—Externally resembling *T. apicalis* closely, but paler overall. Length of body including wings in repose 6.5 mm. Pygofer and subgenital plates (Figs. 1–3) identical to those of *T. apicalis* except setae on subgenital plates longer, approximately 0.40 × inner length of pates (approx. 0.30 × inner plate length in *T. apicalis*). Styles and aedeagus (Figs. 4–5) closely resembling those of *T. apicalis* except posterior extensions of aedeagal connective thicker and each bifid apically.

Notes.—Linnavuori's (1959) less restrictive definition of the subgenus encompassed the male of his species, unknown until now. The paratype female from Mexico was a misidentified specimen of *T. apicalis* (see above).

Summary of previously reported distri-

bution.—VENEZUELA: Caracas (holotype female).

New distribution records (NMNH).—VENEZUELA: Aragua: 2 km N Ocumare de la Costa, 31-III-1981, A.S. Menke and L. Hollenberg (16 males, 12 females); Maracay, 26-XI-1967, G.I. Stage (1 male); Carúpano Lt., VIII-1971, J.Maldonado-C. (1 female).

***dicentrus** DeLong—USA
Texananus dicentrus DeLong 1939a: 236 [n. sp., holotype OSUC]

Distribution: USA: Illinois (holotype).

handlirschi (Ball)—MEXICO
Phlepsius (*Iowanus*) *handlirschi* Ball 1918: 383 [n. sp., syntypes in Vienna Museum]
Texananus handlirschi (Ball); DeLong 1939a: 236

Distribution.—MEXICO: Guerrero (syntypes), Distrito Federal.

***longipennis** Crowder—USA
Texananus (*Iowanus*) *longipennis* Crowder 1952: 369 [n. sp.; paratype NMNH]

Distribution.—USA: Alabama (holotype), Arkansas, Georgia, Mississippi, Tennessee.

lyratus (DeLong & Hershberger)—USA
Iowanus lyratus DeLong & Hershberger 1948: 112 [n. sp.]
Texananus (*Iowanus*) *lyratus* (DeLong & Hershberger); Crowder 1952: 364.

Distribution.—USA: Georgia (holotype).

majestus (Osborn & Baker)—USA
Phlepsius majestus Osborn & Ball 1897: 229 [n. sp.; lectotype Iowa State College]
Texananus majestus (Osborn & Ball); DeLong 1939a: 236.
Texananus borrori DeLong 1939a: 237 [n. sp.]
Texananus (Iowanus) majestus (Osborn & Ball); Crowder 1952: 365. Equals *Texananus borrori* DeLong.

Distribution.—USA: Ohio (*borrori* holotype), Illinois, Iowa (*majestus* lectotype), Minnesota.

Subgenus *Texananus* Ball

Synonymy and type species as for the genus. A key to species of America North of Mexico was provided by Crowder (1952).

Diagnosis.—Pygofer of male lacking a hooklike process.

Checklist and Distribution Summary for Species of *Texananus* (*Texananus*)

angus DeLong—USA
Texananus angus DeLong 1938: 42 [n. sp.]

Distribution.—USA: Texas (holotype), Oklahoma.

***arctostaphylae** (Ball)—CANADA, USA
Phlepsius arctostaphylae Ball 1900: 202 [n. sp.; holotype NMNH]
Texananus (*Texananus*) *arctostaphylae* (Ball); Oman 1949: 141 Equals *Phlepsius cumulatus* [error]

Distribution.—CANADA: Manitoba. USA: Colorado (lectotype), Minnesota, North Dakota, Wisconsin.

areolatus (Baker)—MEXICO
Phlepsius areolatus Baker 1898: 30 [n. sp.; holotype NMNH]
Texananus areolatus (Baker); DeLong & Caldwell 1937: 44

Distribution.—MEXICO: Monterrey (holotype).

***barbus** DeLong—MEXICO
Texananus barbus DeLong 1944: 229 [n. sp.; holotype OSUC]

Distribution.—MEXICO: Michoacán (6,500 ft.) (holotype).

***biacus** DeLong—MEXICO
Texananus biacus DeLong 1939b: 389 [n. sp.; holotype OSUC]
Texananus biacus DeLong; DeLong 1944: 236

Distribution.—MEXICO: Guerrero (1,700 ft.)(holotype).

***bialtus** DeLong—USA

Texananus bialtus DeLong 1938: 185 [n. sp.; holotype OSUC]

Distribution.—USA: Texas (holotype).

****bilicium*** DeLong—MEXICO
Texananus bilicium DeLong 1944: 232 [n. sp.; paratype OSUC]

Distribution.—MEXICO: Michoacán (6,500–7,500 ft.) (holotype).

cajaensis Linnavuori—COSTA RICA
Texananus (*Texananus*) *cajaensis* Linnavuori 1959: 200 [n. sp.]

Distribution.—COSTA RICA: Heredia (holotype).

****constrictus*** Crowder—USA
Texananus (*Texananus*) *constrictus* Crowder 1952: 350 [n.sp.; paratype NMNH]

Distribution.—USA: Arizona (holotype).

cumulatus (Ball)—USA
Phlepsius cumulatus Ball 1900: 202 [n. sp.; lectotype NMNH]
Phlepsius notatipes Osborn & Lathrop, 1923: 343 [n. sp.]
Texananus cumulatus (Ball); DeLong & Knull 1946: 52. Equals *Phlepsius notatipes* Osborn & Lathrop.

Distribution.—USA: Colorado (*cumulatus* lectotype), Montana, Nebraska, Utah, Washington (*notatipes* holotype).

****curtus*** DeLong—MEXICO
Texananus curtus DeLong 1939b: 384 [n. sp.; likely paratypes OSUC]

Distribution.—MEXICO: Guerrero (2,500 ft.) (holotype), Oaxaca (300 ft.), Hidalgo (5,700–7,800 ft.), nr. Distrito Federal (9,000 ft.), semidesert habitats.

****cuspidatus*** DeLong—MEXICO
Texananus cuspidatus DeLong 1939b: 382 [n. sp.; paratype OSUC]

Distribution.—MEXICO: Chiapas (holotype), Veracruz (3,200 ft.), San Luis Potosí (350 ft., lowland tropical rainforest).

decorus (Osborn & Baker)—USA
Phlepsius decorus Osborn & Ball, 1897: 230 [n. sp.]
Texananus decorus (Osborn & Ball); DeLong & Caldwell 1937: 44.

Distribution.—USA: Connecticut, District of Columbia, Florida, Kansas, Maine, Maryland, Massachusetts, Missouri, Nebraska (lectotype), Virginia

delicatus (Osborn & Lathrop)—USA
Phlepsius delicatus Osborn & Lathrop, 1923: 347 [n. sp.; holotype California Academy of Sciences, San Francisco, USA]
Texananus delicatus (Osborn & Lathrop); DeLong & Caldwell 1937: 44.

Distribution.—USA: California (holotype).

denticulus (Osborn & Lathrop)—USA
Phlepsius denticulus Osborn & Lathrop, 1923: 345 [n. sp.; holotype California Academy of Sciences, San Francisco, USA]
Texananus denticulus (Osborn & Lathrop); DeLong & Caldwell 1937: 44.

Distribution.—USA: California (holotype).

****deversus*** DeLong & Hershberger—USA
Texananus deversus DeLong & Hershberger 1949: 182 [n. sp.; holotype OSUC]

Distribution.—USA: Texas (holotype).

distinctus (Lathrop)—USA
Phlepsius distinctus Lathrop 1917: 129 [n. sp.]
Texananus distinctus (Lathrop); DeLong & Caldwell 1937: 44.

Notes.—Crowder (1952) stated that the type specimens were destroyed by fire according to F.H. Lathrop, but compared with specimens at OSUC beforehand.

Distribution.—USA: Florida, Georgia, South Carolina (holotype).

dolus DeLong—CANADA, USA
Texananus dolus DeLong 1938: 186 [n. sp.; holotype OSUC]

Distribution.—CANADA: Manitoba. USA: Montana, North Dakota, South Dakota, Utah (holotype), Wisconsin.

elongatus (Ball)—MEXICO
Phlepsius elongatus Ball 1918: 382 [n. sp., syntypes in Vienna Museum]
Texananus elongatus (Ball); DeLong & Caldwell 1937: 44.

Note.—Oman (1949) referred the Mexican species *elongatus* and *apicalis* (known only from females) to the subgenera *Texananus* and *Iowanus*, respectively. Metcalf (1967) instead listed *elongatus* in *Iowanus*, but since no explanation was provided, and because Oman correctly assigned *apicalis* to *Iowanus* (see above), *elongatus* is here returned to subgenus *Texananus*. Males of *T. elongatus* are still unkown.

Distribution.—MEXICO: Guerrero (holotype).

****extensus*** Crowder—USA
Texananus (*Texananus*) *extensus* Crowder 1952: 333 [n. sp.; paratype NMNH]

Distribution.—USA: California (holotype).

extremus (Ball)—MEXICO, USA
Phlepsius extremus Ball 1901: 10 [n. sp.]
Texananus extremus (Ball); Oman 1949: 142.

Distribution.—CANADA: British Columbia. MEXICO: Baja California. USA: Utah to California (holotype from Colorado).

****fumosus*** Crowder—USA
Texananus (*Texananus*) *fumosus* Crowder 1952: 338 [n. sp.; paratype NMNH]

Distribution.—USA: Kansas (holotype), Texas.

gladius DeLong—USA
Texananus gladius DeLong 1938: 41 [n. sp.]

Distribution.—USA: Arizona (holotype), Texas.

****graphicus*** (Ball)—USA
Phlepsius graphicus Ball 1900: 201 [n. sp.; holotype NMNH]
Texananus (*Texananus*) *graphicus* (Ball); Oman 1949: 142 Equals *marmor* [error]

Distribution.—USA: Colorado (lectotype), Kansas, Nebraska, Wyoming.

****hosanus*** (Ball)—MEXICO
Phlepsius hosanus Ball 1918: 386 [n. sp.; likely paratype, OSUC]
Texananus hosanus (Ball); DeLong 1944: 235

Distribution.—MEXICO: Guerrero (holotype) Hidalgo (5,000 ft.), Michoacán (4,000–6,750 ft.), Sistrito Federal (7,500–10,300 ft.), semidesert to pin fir forest habitats.

****lathropi*** (Baker)—USA
Phlepsius annulatus Osborn & Lathrop 1923: 342 [n. sp.]
Phlepsius lathropi Baker 1925: 159 [*nom. nov.* for *Phlepsius annulatus* Osborn & Lathrop, preoccupied]
Texananus lathropi (Baker): DeLong & Caldwell 1937: 44.

Notes.—Crowder (1952) stated that the type specimens were destroyed by fire according to F.H. Lathrop, but deposited correcty identified specimens at OSUC.

Distribution.—USA: California, Idaho, Oregon (syntypes).

****latipex*** DeLong—USA
Texananus latipex DeLong 1943: 124 [n. sp.]

Distribution.—USA: Arizona (holotype), Idaho, Oregon, Nevada, Utah, California.

marmor (Sanders & DeLong)—CANADA
Phlepsius marmor Sanders & DeLong 1923: 152 [n. sp.]
Texananus marmor (Sanders & DeLong); DeLong & Knull 1946: 52.

Distribution.—CANADA: Manitoba (holotype).

****mexicanus*** (Ball)—MEXICO

Phlepsius mexicanus Ball 1918: 385 [n. sp.; syntype? NMNH]
Texananus mexicanus (Ball); DeLong 1939b: 390

Distribution.—MEXICO: Veracruz and Guerrero (syntypes), Zamora (5,100 ft.), Michoacán (6,500 ft.), San Luis Potosí (300 ft.).

monticolus DeLong—USA
Texananus monticolus DeLong 1943: 125 [n. sp.]

Distribution.—USA: New Mexico (holotype), Utah.

****oregonus*** (Ball)—MEXICO, USA
Phlepsius oregonus Ball 1931: 85 [n. sp.]
Texananus manus DeLong 1938: 42 [n. sp.]
Texananus oregonus (Ball); DeLong & Knull 1946: 52. Equals *Texananus manus* DeLong.

Distribution.—MEXICO: Baja California. USA: Arizona, California, Oregon (holotype), Washington.

ovatus (Van Duzee)—MEXICO, USA
Phlepsius ovatus Van Duzee 1892: 79 [n. sp.]
Phlepsius (*Texananus*) *ovatus* (Van Duzee); Ball 1918: 387.
Texananus ovatus (Van Duzee); DeLong 1939b: 383

Distribution.—USA: Arkansas, California, Colorado, Kansas, Louisiana, North Dakota, Oklahoma, Oregon, Tennessee, Texas (syntypes), Utah. MEXICO: Baja California, Morelos, Veracruz [DeLong 1944 stated that the species probably does not truly occur in Mexico].

****pergradus*** DeLong—MEXICO, USA
Texananus pergradus DeLong 1938: 185 [n. sp., holotype OSUC]

Distribution.—MEXICO: Monterey. USA: Arizona, California, New Mexico (holotype), Texas.

****personatus*** (Baker)—USA
Phlepsius personatus Baker 1898: 30 [n. sp.; holotype NMNH]
Phlepsius cinerosus Osborn & Lathrop 1923: 347 [n. sp.; paratype NMNH]
Texananus spatulatus personatus (Baker); DeLong & Caldwell 1937: 44.
Texananus cinerosus (Osborn & Lathrop); DeLong & Caldwell 1937: 44.
Phlepsius personatus Baker; Oman 1947: 59. Equals *Phlepsius cinerosus* Osborn & Lathrop.

Distribution.—USA: Arizona (*personatus* holotype), New Mexico (*cinerosus* holotype).

****proximus*** Crowder—USA
Texananus (Texananus) proximus Crowder 1952: 355 [n. sp.; paratype NMNH]

Distribution.—USA: Utah, Washington (holotype).

rufusculus (Osborn & Lathrop)—USA
Phlepsius rufusculus Osborn & Lathrop 1923: 340 [n. sp.]
Texananus rufusculus (Osborn & Lathrop); DeLong & Caldwell 1937: 44.

Distribution.—USA: Arkansas, Louisiana, Missouri (holotype), Ohio.

sabinus (Sanders & DeLong)—USA
Phlepsius sabinus Sanders & DeLong 1920: 15 [n. sp.]
Texananus sabinus (Sanders & DeLong); DeLong & Caldwell 1937: 44

Distribution.—USA: Arizona (holotype).

****serrellus*** DeLong—MEXICO
Texananus serrellus DeLong 1944: 229 [n. sp.; paratypes OSUC]

Distribution.—MEXICO: Guerrero (sea level-2,500 ft.) (holotype), Michoacán (6,500–7,500 ft.), Morelos (4000 ft.).

****sextus*** Crowder—USA
Texananus (Texananus) sextus Crowder 1952: 346 [n. sp.; paratype NMNH]

Distribution.—USA: Arizona (holotype).

sonorus (Ball)—USA

Phlepsius sonorus Ball 1936: 19 [n. sp.; holotype NMNH]
Texananus sonorus (Ball); DeLong & Caldwell 1937: 44.

Distribution.—USA: Arizona (holotype).

****spatulatus*** (Van Duzee)—CUBA, MEXICO, USA
Phlepsius spatulatus Van Duzee 1892: 78 [n. sp.; lectotype Iowa State College]
Texananus spatulatus (Van Duzee); DeLong 1939b: 389, 396

Distribution.—CUBA. MEXICO: Baja California, Nuevo León, Coahuila, Jalisco, San Luis Potosí, Sinaloa, Sonora, Tamaulipas, Morelos, Oaxaca, Guerrero, Veracruz, low desert and semidesert habitats up to 5,000 ft. USA: Arizona, California, Colorado, Kansas, Montana, Nevada, New Mexico, Oklahoma, Texas (lectotype), Utah.

superbus (Van Duzee)—MEXICO, USA
Phlepsius superbus Van Duzee 1892: 81 [n. sp.]
Phlepsius (*Texananus*) *superbus* (Van Duzee); Ball 1918.
Texananus superbus (Van Duzee); DeLong & Caldwell 1937: 43.

Notes.—DeLong (1938) asserted that the Arizona specimens of the original type series were not conspecific with those from North Carolina, and designated the latter as the type series.

Distribution.—USA: North Carolina (designated types), Tennessee, Colorado, Arizona. MEXICO: north and central.

ultratus DeLong—USA
Texananus ultratus DeLong 1943: 126 [n. sp.]

Distribution.—USA: Arkansas (holotype), Arizona.

****uncinatus*** DeLong—MEXICO
Texananus uncinatus DeLong 1944: 232 [n. sp.; paratypes OSUC]

Distribution.—MEXICO: Michoacán (500–7,500 ft.) (holotype).

****uncus*** DeLong—MEXICO
Texananus uncus DeLong 1944: 233 [n. sp.; holotype OSUC]

Distribution.—MEXICO: Distrito Federal (900 ft.) (holotype).

****validus*** Crowder—USA
Texananus (Texananus) validus Crowder 1952: 357 [n. sp.; paratype NMNH]

Distribution.—USA: Arizona (holotype).

vermiculatus DeLong—MEXICO, USA
Texananus vermiculatus DeLong 1938: 42 [n. sp.]

Distribution.—MEXICO: Sonora, Jalisco (5,000 ft. "or less," semidesert grasses). USA: Arizona (holotype), Texas.

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